

Atopic Dermatitis: Adult & Pediatric

Skin and Integumentary

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

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Background

Atopic dermatitis, also known as eczema, is an inflammatory disorder of the skin (Maheady, Winland-Brown, & Porter, 2019). Onset is usually in early childhood with periods of exacerbation and remission characterized by flares of ill-defined patches of erythema, scale and excoriation (Maheady et al., 2019). Significant pruritus and generalized dry skin are usually prominent features (Maheady et al., 2019).

Further information about this condition is as follows:

- cause is largely unknown;
- thought to be an interplay of genetic predisposition, altered skin barrier function, and altered immune response to allergens, irritants, and microbes;
- typically begins in infancy (two to six months of age) but may present later;
- may last throughout entire life;
- pattern in adulthood differs from that in infancy and childhood;
- periods of remission and exacerbation;
- family history of skin conditions (Heer Nicol, & Heuther, 2019).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- severe disseminated atopic dermatitis (widespread lesions affecting activities of daily living and causing emotional distress),
- severe atopic dermatitis with secondary infection (e.g., herpes), and
- systemic manifestation of skin or soft tissue infection (e.g., fever, skin appears red and hot, feeling unwell, changes in blood pressure or pulse, etc.) (Interprofessional Advisory Group [IPAG], personal communication, July 19, 2019).

Predisposing and Risk Factors

Predisposing and risk factors for atopic dermatitis include:

- inherited skin sensitivity,
- excessively hot or cold climates,
- excessive washing, or
- use of harsh soaps or detergents (Maheady et al., 2019).

Health History and Physical Exam

Subjective Findings

The circumstances of atopic dermatitis should be determined. These include:

- presentation typically begins in infancy (two to six months of age);
- in infants, it usually affects the trunk, face, extensor surfaces, and scalp;
- in children, it usually affects the antecubital fossae and popliteal fossae;
- in adults, it usually affects the face, neck, upper chest, genital area, and hands, but may be more generalized;
- periods of remission and exacerbation;
- cycle of itch, scratch, rash, itch;
- specific irritating agents may be identified as triggers;
- wool, solvents, perfumed creams, lotions, and soaps may be bothersome;
- poor sleep related to symptoms;
- family history of skin conditions and other atopic conditions such as allergic rhinitis and asthma; and/or
- hot humid or cold dry weather and emotional stress which may aggravate symptoms (Maheady et al., 2019).

Objective Findings

Clients with atopic dermatitis may present with:

- scaly, dry, and thickened (lichenified) patches of skin;
- secondary changes to skin due to chronic rubbing or scratching are as follows:
 - infant stage: pruritic, red, scaly and crusted lesions on the exterior surface of the cheek or scalp; or
 - childhood stage: lichenified plaques on flexural surfaces especially the antecubital and popliteal fossae, volar aspects of the wrists, ankles and neck; or
 - adult stage: localized and lichenified patches of skin with a similar distribution as childhood stage or primarily located on hands or feet.
- fissures may be present;
- excoriated skin may be noted;
- mild redness and edema is often noted;

- vesicles may be present;
- lesions may weep;
- some areas of skin may show chronic changes (thin skin, scarring, lichenification); and
- presence of pustular lesions may be present, which suggests secondary infection (Maheady et al., 2019).

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- seborrheic dermatitis,
- dry skin (winter itch),
- allergic contact dermatitis,
- irritant contact dermatitis,
- skin infections (e.g., impetigo, herpes, tinea),
- psoriasis, or
- scabies (Maheady et al., 2019).

Making the Diagnosis

The diagnosis is based on history and physical findings, on occasion a skin biopsy may be required. Ensure the following essential features are present:

- pruritus,
- chronic or relapsing history,
- typical morphology and age specific patterns as follows:
 - facial, neck, and extensor involvement in infants and children;
 - current or previous flexural lesions in any age group;
 - sparing of the groin and axillary regions.

The following features are also seen in most cases:

- early age of onset,
- atopy (immunoglobulin E reactivity),
- personal and/or family history, and
- winter itch (Eichenfield, et al., 2014).

Investigations and Diagnostic Tests

Lab testing is not used routinely and not recommended, however it is advisable to obtain a swab for culture and sensitivity if secondary infection is suspected (Maheady et al., 2019).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to:

- relieve generalized dry skin and pruritus,
- reduce inflammation,
- reduce the risk of secondary infection,
- prevent flare-ups,
- improve sleep,
- improve overall wellbeing, and
- prevent chronic skin changes such as pigment changes and scarring (Maheady et al., 2019).

Non-Pharmacological Interventions

The RN(AAP) should recommend, as appropriate, the following non-pharmacological interventions:

- Offer support to the client as it can be difficult to live with this irritating and cosmetically unattractive condition.
- Assist the client in identifying precipitating and aggravating factors and encourage avoidance.
- Promote drying of wet lesions and cooling with compresses qid prn (normal saline or cool tap water).
- Promote lubrication of dry lesions with Glaxal base or petroleum jelly (Vaseline) bid, after bathing and prn. Apply to all dry eczematous lesions and non-inflamed areas of the skin to maintain hydration.
- Recommend the use of mild soap or no soap for bathing (Koutroulis, Pyle, Kopylov, Little, Gaughan, & Kratimenos, 2016; Wollenberg et al., 2018).
- Consider recommending a 'bleach bath' for clients who fail to respond to standard treatment, particularly those prone to recurrent infection and atopic dermatitis flares. Education on the goals, proper use, and safe storage of bleach must be provided to clients/caregivers.
- A concentration of 0.005% bleach (sodium hypochlorite) is made by adding 120 mL (1/2 cup) of 6% household bleach to a full bathtub [estimated to be approximately 151 L (40 gallons)] of water]. The amount of bleach should be adjusted based on the size of the bathtub and the amount of water in the tub. A 10-minute bath two times per week is recommended (Rx Files Academic Detailing Program, 2021).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of atopic dermatitis are in accordance with the *RxFiles Drug Comparison Charts* (Rx Files Academic Detailing Program, 2021), *Anti-infective Guidelines for Community-acquired Infections* (Anti-infective Review Panel, 2019), and the *Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: Part 1* (Wollenberg et al., 2018).

Topical Corticosteroid Therapy

The drier the lesion, the wetter the application, and vice versa. For example, gels and creams are used for acute, weeping eruptions. Ointments are used for dry or lichenified lesions. Steroids should be used at the lowest effective dose for the shortest duration to minimize adverse effects. It should be noted however, that client fears of side-effects of corticosteroids should be recognized and addressed to improve adherence and avoid undertreatment.

Caution: Children have a high skin surface to body weight ratio, increasing the risk of adrenal suppression. It is important to use the lowest effective dose of medication for the shortest amount of time that can achieve the best result.

	Drug	Dose	Route	Frequency	Duration
Pediatric and Adult					
For the face and intertriginous folds consider cream, lotion, gel, or foam.					
	Hydrocortisone 0.5%	fingertip units based on surface area to be covered	topical	b.i.d.	7-14 days
	Hydrocortisone 1%	fingertip units based on surface area to be covered	topical	b.i.d.	7-14 days
For the scalp consider gel or lotion which are useful in hairy areas.					
	Mometasone Furoate 0.1%	fingertip units based on surface area to be covered	topical	Once daily	7-14 days
For the body consider cream, ointment, gel, or lotion.					
	Mometasone Furoate 0.1%	fingertip units based on surface area to be covered	topical	Once daily	7-14 days
For the palms and soles consider ointment.					
	Betamethasone Valerate 0.1%	fingertip units based on surface area to be covered	topical	b.i.d.	7-14 days

Treatment of Pruritus

Pruritus associated with eczema is not mediated by histamine, so histamine blockade is generally ineffective. HydrOXYzine (Atarax) may provide some relief through central sedation and is useful to break the itch-scratch cycle (Maheady et al., 2019). However, evidence is lacking regarding the age at which this should be prescribed in the pediatric population.

	Drug	Dose	Route	Frequency	Duration
Pediatric (≤ 2 years of age)					
Note: Consult a physician/NP regarding the use of DiphenhydrAMINE hydrochloride					
Pediatric (> 2 to ≤ 6 years of age)					
	DiphenhydrAMINE hydrochloride	6.25 mg (maximum dose 25 mg/day)	p.o.	q4-6h prn	7 days
Pediatric (> 6 to ≤ 12 years of age)					
	DiphenhydrAMINE hydrochloride	12.5 mg (maximum dose 75 mg/day)	p.o.	q4-6h prn	7 days
Pediatric (≤ 12 years of age)					
Note: Consult a physician/NP regarding the use of hydrOXYzine.					
Pediatric (> 12 years of age)					
	hydrOXYzine	10 mg	p.o.	qhs prn	7 days
OR	DiphenhydrAMINE hydrochloride	25 mg	p.o.	q4-6h prn	7 days
Adult					
	hydrOXYzine	10-25 mg	p.o.	b.i.d.	7 days
OR	DiphenhydrAMINE hydrochloride	25-50 mg	p.o.	q4-6h prn	7 days
Note: In adults who are small, elderly, or taking anti-anxiety medication, start with 10 mg.					

Treatment of Secondary Infection (Topical and Oral)

Francis and colleagues (2017) suggested that the care of milder clinically infected eczema flares in children be treated with topical corticosteroids and emollients alone and topical or oral antibiotics should be reserved for moderate to severe clinically infected eczema flares due to development of resistance and allergy or skin sensitization. The authors stated that there is little evidence of meaningful clinical benefit from antibiotic use for mild flares (Francis et al., 2017).

	Drug	Dose	Route	Frequency	Duration
Pediatric and Adult					
	Mupirocin cream	based on surface area to be covered	topical	t.i.d.	7-10 days
OR	Fucidic acid cream	based on surface area to be covered	topical	b.i.d.	7-10 days
OR	Polysporin triple therapy	based on surface area to be covered	topical	t.i.d.	7-10 days
Pediatric (without penicillin allergy)					
	Cephalexin	50-100 mg/kg/day (maximum 2 g/day)	p.o.	divided q6h	5-7 days
OR	Cloxacillin	50 mg/kg/day (do not exceed the adult dose)	p.o.	divided q6h	5-7 days
Adult (without penicillin allergy)					
	Cephalexin	500 mg	p.o.	q.i.d.	5-7 days
OR	Cloxacillin	500 mg	p.o.	q.i.d.	5-7 days
Pediatric (with penicillin allergy)					
	Sulfamethoxazole-Trimethoprim (SMX-TMP)	8-12 mg/kg/day (TMP is used for calculations; do not exceed adult dose)	p.o.	divided q12h	5-7 days
OR	Doxycycline (≥ 9 years of age)	4 mg/kg/day (maximum single dose of 100 mg)	p.o.	divided b.i.d.	5-7 days
Adult (with penicillin allergy)					
	Sulfamethoxazole-Trimethoprim (SMX-TMP)	1-2 DS tabs (800/160 mg)	p.o.	b.i.d.	5-7 days
OR	Doxycycline	100 mg	p.o.	b.i.d.	5-7 days

	Drug	Dose	Route	Frequency	Duration
Pediatric [≤ 2 months of age with Methicillin-resistant <i>S. aureus</i> (MRSA)]					
Consult a physician/NP					
Pediatric (with MRSA)					
	Sulfamethoxazole-Trimethoprim (SMX-TMP)	8-12 mg/kg/day (TMP is used for calculations; do not exceed adult dose)	p.o.	divided q12h	5-7 days
OR	Doxycycline (≥ 9 years of age)	4 mg/kg/day (maximum single dose of 100 mg)	p.o.	divided b.i.d.	5-7 days
OR	Clindamycin	25-30 mg/kg/day (do not exceed adult dose)	p.o.	divided into 3 or 4 doses	5-7 days
Adult (with MRSA)					
	Sulfamethoxazole-Trimethoprim (SMX-TMP)	1-2 DS tabs (800/160 mg)	p.o.	b.i.d.	5-7 days
OR	Doxycycline	100 mg	p.o.	b.i.d.	5-7 days
OR	Clindamycin	150-450 mg	p.o.	q.i.d.	5-7 days

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Counsel about appropriate use of medications (dose, frequency, application, compliance, etc.).
- Advise to stop using topical steroid preparations once acute lesions have healed since steroids do not have any preventive benefit and may further irritate and damage skin.
- Encourage proper hygiene to prevent secondary bacterial infection.
- Recommend use of laundry soap versus detergents and consider double rinse cycle of clothes.
- Advise to avoid fabric softeners.
- Recommend loose-fitting cotton clothing.
- Recommend avoidance of coarse materials and wool.
- Recommend avoidance of overheating (e.g., hot showers/baths).
- Recommend avoidance of irritants at work and at home.
- Recommend use of a soap substitute (e.g., Aveeno) and avoidance of soaps.
- Suggest that cotton gloves be worn inside rubber gloves when working with liquids.

- Suggest that greasy lubricants (e.g., Lubriderm, Vaseline) be applied within minutes of leaving shower or bath to "lock in" moisture. (Maheady et al., 2019; Rx Files Academic Detailing Program, 2021).

Monitoring and Follow-Up

The RN(AAP) should advise the client to be reassessed in one week to monitor the efficacy of interventions and return sooner if signs of infection develop. If no response, discuss the use of a more potent topical steroid with a physician/NP.

Complications

The following complications may occur:

- scarring,
- secondary bacterial infection,
- chronic irritation of skin,
- side effects of medication (e.g., steroid preparations and pigment changes or thinning of skin),
- poor sleep and irritability, or
- self-esteem issues (Maheady et al., 2019).

Referral

Refer to a physician/NP if the client presentation is consistent with the *Immediate Consultation Requirements* section and for clients who do not respond to treatment or require maintenance therapy (IPAG, personal communication, July 19, 2019).

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